

## CLAIMS:

5

1. Method of operating a synchronous rectifier comprising a MOSFET, the method comprising the step of: controlling an output voltage of the synchronous rectifier by controlling the channel-switching of the MOSFET.

10 2. The method of claim 1, further comprising the steps of: determining a positive sign-change of a channel voltage such that the channel voltage becomes positive; performing an on-switching of the channel of the MOSFET a first time period after the positive sign-change of the channel voltage.

15 3. The method of claim 2, wherein the first time period is determined on the basis of a control error voltage.

4. The method of claim 1, determining a positive sign-change of a channel voltage such that the channel voltage becomes positive; performing an on-switching of  
20 the channel of the MOSFET upon detection of the positive sign change; and performing an off-switching of the channel of the MOSFET after a second period of time.

5. The method of claim 4, wherein the second time period is determined on the basis of a control error voltage.

25

6. The method of claim 1, wherein the channel switching of the MOSFET is duty-cycle modulated.

7. The method of claim 6, wherein the duty-cycle is controlled on the basis  
30 of the error voltage; and wherein the control of the duty-cycle is such that the larger the error voltage, the larger the duty-cycle.

8. The method of claim 1, further comprising the step of: low-pass filtering an output voltage of the synchronous rectifier with a time constant larger than a period of an input voltage of the synchronous rectifier; and performing the channel-switching 5 of the MOSFET on the basis of the low-pass filtered output voltage.

9. Synchronous rectifier, comprising: a MOSFET; and an output voltage control circuit for controlling an output voltage of the synchronous rectifier by controlling the channel-switching of the MOSFET.

10 10. The synchronous rectifier of claim 9, wherein the output voltage control circuit is adapted to perform one of a first, second, third or fourth operation: a first operation where the output voltage control circuit determines a positive sign-change of a channel voltage such that the channel voltage becomes positive and performs an on- 15 switching of the channel of the MOSFET a first time period after the positive sign- change of the channel voltage; a second operation where the output voltage control circuit determines the positive sign-change of the channel voltage such that the channel voltage becomes positive, performs an on-switching of the channel of the MOSFET upon detection of the positive sign change and performs an off-switching of the channel 20 of the MOSFET after a second period of time.

11. The synchronous rectifier of claim 9, comprising: a first MOSFET; a first output voltage control circuit for controlling a first output voltage of the synchronous rectifier by controlling the channel-switching of the first MOSFET; a 25 second MOSFET; and a second output voltage control circuit for controlling a second output voltage of the synchronous rectifier by controlling the channel-switching of the second MOSFET; wherein the first output voltage is stacked on the second output voltage.

30 12. The synchronous rectifier of claim 9, wherein the MOSFET and the output voltage control circuit are integrated in one package.

13. Output voltage control circuit for controlling an output voltage of a synchronous rectifier, wherein the output voltage control circuit controls the output voltage of the synchronous rectifier by controlling the channel-switching of a MOSFET  
5 of the synchronous rectifier.